

REMARKS

The applicants appreciate the Examiner's thorough examination of the application and request reexamination and reconsideration of the application in view of the following remarks.

The Examiner rejects claims 1-24 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,506,269 to *Greene* in view of U.S. Patent No. 5,360,503 to *Coffy*. In response to the applicants' previous arguments, the Examiner concludes that the references are fully combinable, and that the rejection stands.

The Examiner cites *Greene* as a primary reference to show the teaching of a radome. However, *Greene* fails to teach or suggest fibers in the radome skin at all as claimed by the applicant. Instead of fibers for radome structural support as claimed by the applicant, *Greene* teaches a machined core with air spaces such that the core posts provide support. For optimum dielectric value for use in the radar range, *Greene* teaches adjusting the percentage of core to air space. The core and skins are bonded together. See e.g. *Greene* Abstract and column 4, lines 17-26 and 42-53, and column 7, lines 36-50.

The Examiner cites *Coffy* as a secondary reference. However, *Coffy* relates to a fabric which is made exclusively of polyester polyarylate in order to eliminate known problems between the fibers and the matrix caused by use of materials with different natures. See e.g. *Coffy* Abstract and column 1, lines 30-35, column 1, line 65 through column 2, line 9, and column 6, lines 27-39.

It is clear that the teachings of *Greene* and *Coffy* are diametrically opposite. For structural support, *Greene* teaches a rigid core, not fiber reinforced material as taught by *Coffy*. To obtain optimum dielectric value for use in the radar frequency range, *Greene* teaches varying the air to core percentage, not the use of a material transparent to electromagnetic waves. To

form a radome, *Greene* teaches separate materials (i.e. polycarbonate) held together by other materials (i.e. polyurethane), not a matrix and not exclusively one material.

Coffy, in turn, fails to teach or suggest that the disclosed fabric can or should be for radomes, why it would be advantageous to do so, and *Coffy* fails to teach or suggest the considerations involved in fabricating a radome: structural integrity, transmission losses, and the engineering trade-offs between structural integrity and transmission losses. See, e.g. pp. 2-3 of the applicants' specification.

The Examiner's reasoning for combining the cited references, namely, that it would have been obvious to employ the composition of *Coffy* in the skin of the radome of *Greene*: (a) does not overcome the fundamental, antithetical, diametrically opposite nature of the two references; and (b) does not satisfy the requirement that there be some motivation, suggestion or teaching in the references of the desirability of making the specific combination claimed by the applicants, supported by some objective teaching of record. The Patent Office is required to show motivation to combine references by making specific findings of fact regarding the level of skill in the art, the relationship between the fields of, in this case, radome design and composite material fabric design, and particular features of the prior art references that would motivate one of ordinary skill in the art to combine elements in references from different fields. See, e.g. In re Dembiczak, 175 F.3d 994, 50 USPQ 2d 1614, 1618, abrogated on other grounds, In re Gartside, 203 F.3d 1305, 52 USPQ 2d 1769 (Fed. Cir. 2000).

In this case, it is only by way of the applicants' specification for the claimed invention, using impermissible hindsight, that the references would be combined.

A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of the invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the

then-accepted wisdom in the field ... Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher'." In re Kotzab, 217 F.3d 1365, 1369, 55 USPQ 2d 1313, 1316 (Fed. Cir. 2000), quoting W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983).

To establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. See In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ 2d 1313, 1316 (Fed. Cir. 2000).

The law is further clear that the teaching of the desirability of combining the references must not come from the applicant's invention. "There must be a reason or suggestion in the art for selecting the procedure used, *other* than the knowledge learned from the applicants' disclosure." See In re Dow Chemical Company, 837 F.2d 469, 473, 5 USPQ 2d 1529, 1532 (Fed. Cir. 1989) (with emphasis added).

Additionally, the Examiner can satisfy the burden of showing obviousness of the combination *only* by showing some *objective teaching* in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. In re Sang Su Lee, 277 F.3d 1338, 61 USPQ 2d 1430, 1433-44 (Fed. Cir. 2002).

The Examiner states:

Regarding Claims 1, 2, 12, 13, 22, and 24, Greene shows a method of producing a radome 10 (Prior Art Fig. 1) comprising at least one rigid panel 13 or 15 (Figures 3 & 4) with an outside skin 14 comprised of polyarylate. No polyester-polyarylate fiber construction appears to be suggested. Thus, Coffy is cited as evidence of obviousness and as resolving the level of ordinary skill in the art and teaches in EXAMPLE 1 in col. 6, line 50 to col. 7, line 5, a composition of

polyester-polyarylate fibers in a rigid matrix material and having remarkable transparency to EM waves, and thus excellent for radomes. It would have been obvious to the skilled artisan to employ such a composition in the skin of the radome in *Greene* for forming the radome with the excellent qualities set forth.

This conclusory analysis is against the weight of the evidence. First, the reason *Coffy* states his fabric has transparency to electromagnetic waves is because otherwise the fabric, when used in space, aeronautical, avionics, car, nautical, and competition sports fields (see, e.g. *Coffy*, column 1, lines 24-29), would decompose in the presence of UV, visible, and microwave radiation: "... the liquid crystal polymers can be exposed to radiation (UV, visible, microwave) without decomposing and have a higher dielectric strength than flexible chain polymers". See *Coffy* column 3, lines 27-30.

There is simply no suggestion in *Coffy* regarding the use of his fabric in radomes nor is there any discussion in *Coffy* relating to the electrical and structural considerations involved in radome design. *Coffy* is void of any teaching of radome design to minimize transmission losses. Thus, those skilled in the art would not read *Coffy* as proposing a suitable fabric for use in radomes as characterized by *Greene* since a) *Greene* teaches a traditional radome skin without any fibers, and b) *Greene* teaches adjusting the percentage of core material to air to address transmission losses.

Coffy fails to teach those skilled in the art that fibers in the skin of a radome can lower transmission losses. At best, those skilled in the art reading *Coffy* would understand that his fabric does not decompose in the presence of radiation. Although the applicants believe that *Coffy* is incorrect, and that LCPs would indeed decompose upon exposure to UV radiation, it does not change the fact that *Coffy*'s alleged reasons are far from a teaching that the fibers help lower transmission losses in a radome. In short, the Examiner has failed to make out a *prima*

facie case of obviousness.

Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine the references ...

Combining prior art references without evidence of such a suggestion, teaching or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability – the essence of hindsight ...

The range of sources available, however, does not diminish the requirement for actual evidence. That is, the showing must be clear and particular ... Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence".

See In re Dembiczak, 175 F.3d 994, 50 USPQ 2d 1614, 1617, abrogated on other grounds, In re Gartside, 203 F.3d 1305, 52 USPQ 2d 1769 (Fed. Cir. 2000) with citations and quotations omitted. In Dembiczak, the Federal Circuit reversed the Board's obviousness rejections because there was no evidence in the record of a suggestion, teaching or motivation to combine the prior art references (which included conventional plastic lawn leaf bags, and books describing painting paper bags to look like a jack-o-lantern) to reject the pending claims to an orange trash or leaf bag with facial indicia that when filled has a generally rounded appearance like a pumpkin.

Accordingly, the applicants' independent claims 1, 12, 13, 22 and 24 are clearly in condition for allowance. Claims 2-11 depend directly or indirectly from claim 1. Claims 14-21 depend directly or indirectly from claim 13. Claim 23 depends from claim 22. Thus, dependent claims 2-11, 14-21, and 23 are also in condition for allowance for at least the foregoing reasons.

CONCLUSION

Each of the Examiner's rejections has been addressed or traversed. Accordingly, it is respectfully submitted that claims 1-24 are in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associates, collect in Waltham, Massachusetts at (781) 890-5678.

Respectfully submitted,



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